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Morphological classification of anemia pdf

In order to continue to enjoy our site, we ask you to confirm your identity as a person. Thank you very much for your cooperation. Pregnancy anemia is a global health challenge affecting low, middle and high income countries with several health and socio-economic progress. Approximately 40.1% of pregnant mothers worldwide develop anemia.¹ As defined by the WHO, anemia in pregnancy develops when haemoglobin (Hb) concentration decreases to $<11\text{g/dl}$ with haematocrit $<0.33/\text{L}$.² Anemia in pregnancy present similarly to anemia in other categories with signs and symptoms, which include the easy development of fatigue, general weakness, decreased cognition and attention/concentration margins, and if they fail to cope, affected mothers are experiencing premature birth with children with low birth weight.³ Global data now show that anemia in pregnancy in low- and middle-income countries can be up to 56%⁴ with continental differences; sub-Saharan Africa shows 57% prevalence, Southeast Asia 48% and South America at 24.1%.⁵ According to the WHO, during pregnancy, anaemia is identified by haemoglobin levels below 11.0 g/dl and can be divided into three severity levels: mild anemia (Hb levels $9\text{ to }10.9\text{ g/dl}$), anaemia (Hb levels $7\text{ to }8.9\text{g/dl}$) and severe anemia (Hb levels below 7 g/dl).¹³ There are several contributors to the development of anaemia in pregnancy in low-income countries, which may include nutritional deficiencies of iron, folate, vitamins A and B12; parasitic infections or chronic infections with tuberculosis and HIV.^{6,7} These factors contribute to varying degrees in the development and progress of anemia in pregnancy, but in sub-Saharan Africa, low iron intake is considered the main cause of anemia in pregnancy.^{7,8} Several maternal anaemia control programs focus on antenatal care (ANC) services to provide repellents, iron/folate supplementation, malaria prophylaxis and distribution networks treated with insecticides (ITN). In Uganda, there has been poor use (ITN) in rural areas⁹ and poor adherence to iron supplementation¹⁰, which has thwarted efforts to reduce anemia in pregnancy. According to a report by ugandan demographic and health surveys, the prevalence of anaemia in pregnant women was 38% in 2016¹, but with regional variations of 32.9% in Gul in northern Uganda, 12.1% in 12 and 32.5% in mpigi.⁷ There is very little data on the prevalence of anemia in pregnant women who have access to an antenatal clinic in the Itojo District Hospital. The aim of the study was to determine the prevalence of anemia and identify risk factors associated with anemia in pregnant women taking ANC at Itojo Hospital, Ntungamo District, southwestern Uganda. Methods This cross-sectional study was conducted at The Itojo Hospital, Ntungamo District, southwestern Uganda from September to December 2018. Pregnant women visiting itojo district hospital for formally agreed and enrolled in the study. The required sample size for enrollment was estimated using a formula for one population share with the following assumptions: prevalence of anemia of 12.1%, 95% confidence level and 5% marginal error. According to a study by Obai, Odongo and Wanyama (2016), the prevalence of anemia in pregnancy in southwestern Uganda was estimated at 12.1%. Use the formula to calculate the sample size for the ratio where: $n = \text{required sample size}$. $Z = \text{critical values of normal distribution to } 95\%$, equivalent to 1.96 $P = \text{the proportion of the target population estimated to have pre-diabetes}$. $d = \text{estimated error rate of } 5\%$ $n = 163$ Design error adjustment and non-response, sample size increased by 5% to 171%. Therefore, the minimum number of pregnant mothers needed for the study was 171. However, due to the low increase in ANC mothers in the facility, the number of 171 has not been reached. Pregnant women were subjected to ultrasound examination to determine the state of pregnancy and check more fetuses. The questionnaire was submitted to collect information on socio-demographic, nutritional, obstetric and gynecological data and clinical conditions. A physical examination followed. The lab technician took five milliliters of blood sample from each participant using a routine local blood collection manual in Uganda. The complete blood count was determined using humacount 80 haematological analyzer (Germany). Peripheral blood stains were produced and stained using Wright's Romanow stain and examined under $\times 1000$ magnification for morphological classification of anemia. The generated data was prepared in EXCEL and later transferred to SPSS version 20 for analysis. To evaluate the association of sociodemographic characteristics of participants with anaemic disease, univariate logistic regression and multivariate logistic regression were used. A 95% confidence level was used with a cut off of $p < 0.05$. Ethical Considerations The study was approved by the Faculty Research Committee of the Mbarara University of Science and Technology and the Director of the Itojo District Hospital (MUST/MLS/023 approval number). Written informed consent was obtained from each participant included in the study and the study protocol was in accordance with the ethical guidelines of the 1975 Helsinki Declaration (1964). Privacy and confidentiality were ensured throughout the study and abnormal findings were shared with the doctors from where the participants were directed. Results Demographic characteristics of study participants Median age of participants was 25 years with an interquartile range of 17.40 years. The majority of women were formally married (95.7%), had a basic education (61.9%), peasants (68.2%), 19.6% in the first trimester, 36.8% in the second trimester and (43.6%) Were in the third trimester (43.6%) as shown in Table 1. Table 1 Demographic characteristics of the prevalence of anaemia among study participants General prevalence of anaemia was 7.4% (Figure 1) with a mean Hb of 12.5 g/dl, hb

6.9 g/dl and a maximum of 15.3 g/dl. 8.3% had severe anaemic anaemic (Hb7.0/dl, WHO, 2017) and the rest had mild anaemic anaemic. 92.6% of participants had normal Hb levels and 7.4% had Hb below 11.0 g/dl. No participant had a slight chumita. Figure 1 Pie chart showing the overall prevalence of anemia in pregnant women at Itojo Hospital. Morphological characterization Anemia According to film reports, most of our participants with anemia had microcytic hypochromatic blood count of 6 (50%), macrocytic normochrome were 5 (41.7%) and normocytic normochrome blood count 1 (8.3%) (Figure 2). Figure 2 Morphological classification of anemia based on peripheral blood smear. Risk factors associated with anachmia Several factors that are believed to be associated with anachmia in pregnancy have been studied. This included pregnancy age, marital status, number of children, occupation, level of education, number of ANC visits, previous pregnancy outcomes and complications, including PPH and preeclampsia among others. Multinomial logistic modelling was carried out to establish a link between these factors and anaemic, and the model was adjusted according to the age of the participants. The results are given in Table 2. Table 2 Multinomial Modeling describing risk factors for anemia (adjusted for age participants) DiscussionDiach for anemia-related anemia of pregnancy-related anemia is a global health problem affecting low-, middle-class, and high-income countries increasing the risk of pregnancy complications and death. The most common cause of anemia in pregnancy is the result of low iron intake, which does not correspond to high requirements during pregnancy. If left untreated or untreated, low iron levels in the blood may increase the risk of reduced age of pregnancy, low birth weight, limited fetal growth, development of sepsis shortly after birth with a high probability of maternal and infant death.14.15 In this study, 7.4% of cases of anemia, which is closely comparable to studies in Ethiopia 9.7%,16 Sudan 10%,17 and Ethiopia 11.6%.18 Prevalence is lower than the global prevalence of anaemia in pregnancy, which was estimated at 40.1%.1 However, our prevalence is lower than uganda's national prevalence (30.4%)19, which shows the spatial distribution of anaemia from region to region and relies on the study methods used. Our prevalence was also lower compared to other studies in other areas of Uganda, studies in southwestern Uganda with a prevalence of 62.8%, Hoima 12.1% and Gulu 32.9%.12 Low prevalence in this study could be due to better services in Itojo Hospital that are supported USAID funded the project, through a \$64.8 million, 5-year award from the U.S. Agency for International Development, IntraHealth International helps the government of Uganda improve the availability of better health services in selected hospitals. Through this project, routine anaemia screening takes place during visits to an antenatal clinics, and mothers who have been found to be poor are adequately managed, unlike other hospitals where routine anaemia screening is not performed. The prevalence of anaemia in the current study is also lower than in studies conducted outside Uganda, for example, in Kisangani DRC 76.2%,20 in southwestern Ethiopia 23.5%,21 study Kwabena Acheampong et al (50.1%)22 Differences in findings can be attributed to larger sample sizes, techniques used in HB estimation and geographic locations in these studies compared to our study. However, our findings are higher than the study in Ethiopia 2.8%.23 Morphological classification anemia According to our study, most of our participants with anemia had microcytic hypochromatic blood count (50%), followed by macrocytic normochrome (41.7%) normocytic normochrome blood count (8.3%). Other similar studies have also shown that microcytic hypochromatic anemia was the predominant morphological classification of anemia in pregnant women and among them; a study conducted at the Mbarara Regional Hospital, where microcytic hypochromatic anemia was 76.68%,24 and in Mulago Uganda, A common type of anemia was microcytic hypochromatic anemia 34.1%,25 our findings disagreed with a study in Ethiopia that found that normocytic normochrome anemia is the most common morphological type of anemia 76%.26 This variant could be closely related to socioeconomic differences and dietary variations. Associated risk factors anemia It is known that several factors increase the risk of developing anemia in pregnancy. These factors can range from modifiable socio-economic factors to unmodifiable demographic factors. In the current study, urinary tract infection was positively associated with anathemia in pregnancy ($p=0.002$ and CI 3.5 to 6.7). This is consistent with a study conducted in the Mbarara Regional Referral Hospital.24 The same was found in a cross-sectional study conducted in the Kisangani DRC. There is an increased incidence of Urinary Tract Infection in pregnancy27 and it has been suggested that some of the organisms known to cause Urinary Tract Infections when they release endotoxin in the blood.28 Husband's occupation and low intake were also significant factors associated with anaemic in pregnancy with $p=0.03$ and 0.04 , respectively. According to the data collected, the predominant occupation of the husband was peasantry (47.8 %) and the prevailing household income is lower than ugandan shilling of 99,000 per month. This was in line with other studies conducted at Mbarara regional referral hospital24 and Kisangani in DRC.20 This may be due to that these mothers can not afford a balanced diet and live in an unhealthy environment. You may predispose them to dietary deficiencies such as iron, which is necessary for blood production. The use of haematina protects against the development of anemia in pregnancy, as shown by our findings with a p -value of <0.001 and CI 0.71 to 0.99). This is in line with various studies conducted in Ethiopia,29 Uganda,7, which have shown similar findings. This may be due to the fact that those who complied and took hematitny had a chance to increase haemoglobin levels, thus being protected against the development of anemia. Our study also agrees with the finding in the study to assess the effect of routine iron supplementation on anemia in pregnancy, where daily iron supplementation was found to reduce the risk of developing anemia by 73%.30 The use of insecticides treated with mosquito was also significantly protective against anemia, according to our study with $p=0.001$. This is in agreement with other studies that have shown that not using ITN has been associated with anemia, such as the study in Mbarara Uganda.24 This may be due to the fact that the use of ITN minimizes the risk that a pregnant mother will be bitten by mosquitoes during sleep, which may result in malaria being one of the risk factors for the development of anemia, as noted in other studies, such as at the Gilgel Gibe Dam area, southwestern Ethiopia.31 A history of postpartum bleeding has also been significantly associated with anaemic in pregnant women, according to our findings with $p=0.03$. Postpartum bleeding leads to an increase in blood loss greater than or equal to 1000 ml of blood loss after childbirth32, resulting in the loss of large amounts of iron in the body, resulting in less iron available for erythropoiesis.33 Conclusion Despite the reported high prevalence of anemia in pregnant women in other regions of the country, the prevalence of anemia in this study was low. Routine anaemia screening is recommended at all ANC clinics across the country. Related risk factors, according to our study, were the occupation of the spouse, household income and history of urinary tract infections, the use of hematinics and the use of insecticides treated with mosquito nets. Limitations of the study The study did not collect risk factors that pregnant women may predispose to anaesland. E.g. malaria infection, yuberge infection. The authors express their thanks to the administration of Itojo Hospital for their support, guidance and materials for the study and staff of the medical side laboratory, which provided them with wright's stain for coloring films with peripheral blood. Special thanks and recognition will also be disowned by the study participants who voluntarily participated in the study. Disclosure Authors do not report any conflict of interest in this work. Links 1. WHO G. WHO Methods and Data Sources for Global Stress Disease estimates 2000-2011. 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